OBLON, SPIVAK, et al.
DOCKET NO: 249751US2S DIV
INVENTOR: Hideo ANDO, et al.
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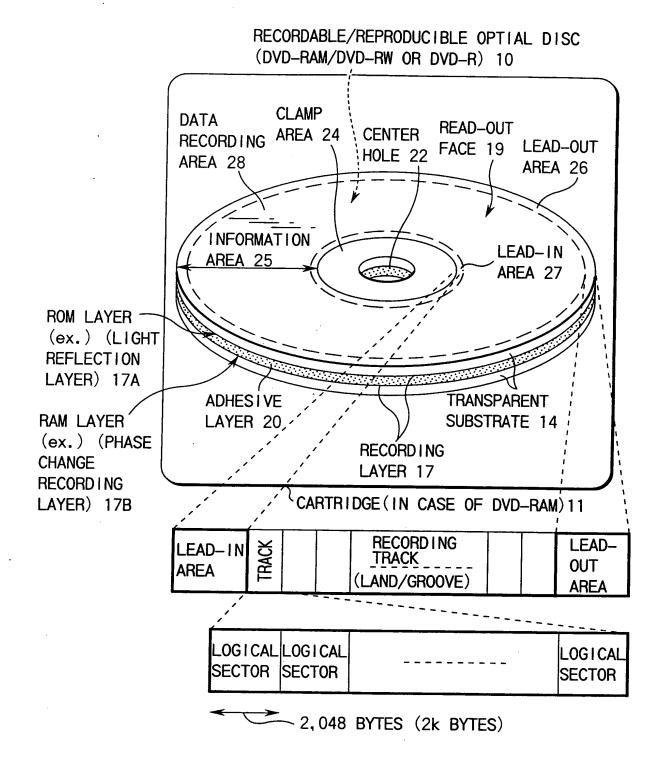


FIG. 1

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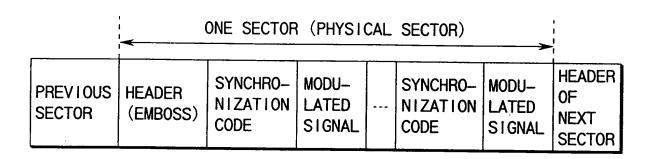


FIG. 2

	(CLU		16 SECT	2 kB)	1 1
SECTOR 501s	SECTOR 501a	SECTOR 501b	SECTOR 501c	 1	SECTOR 501q

FIG. 3

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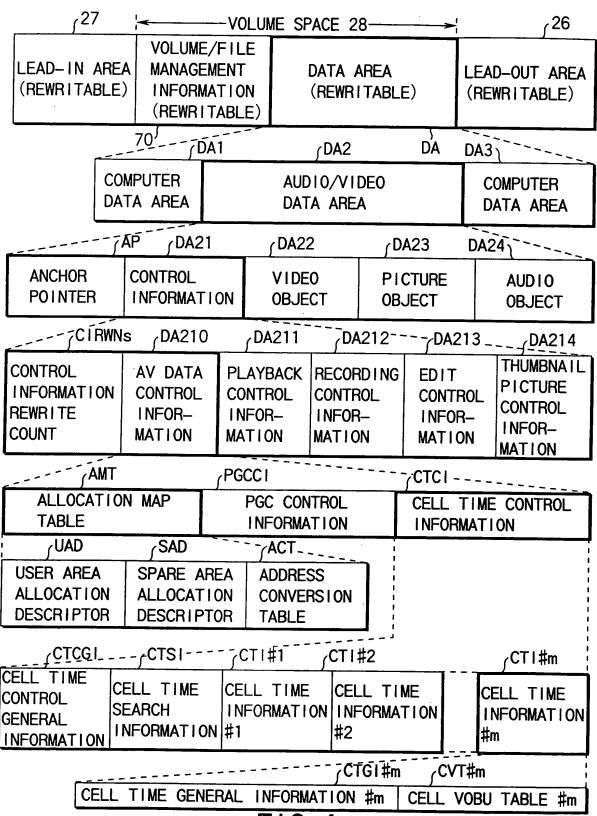


FIG. 4

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INVENTOR: Hideo ANDO, et al.
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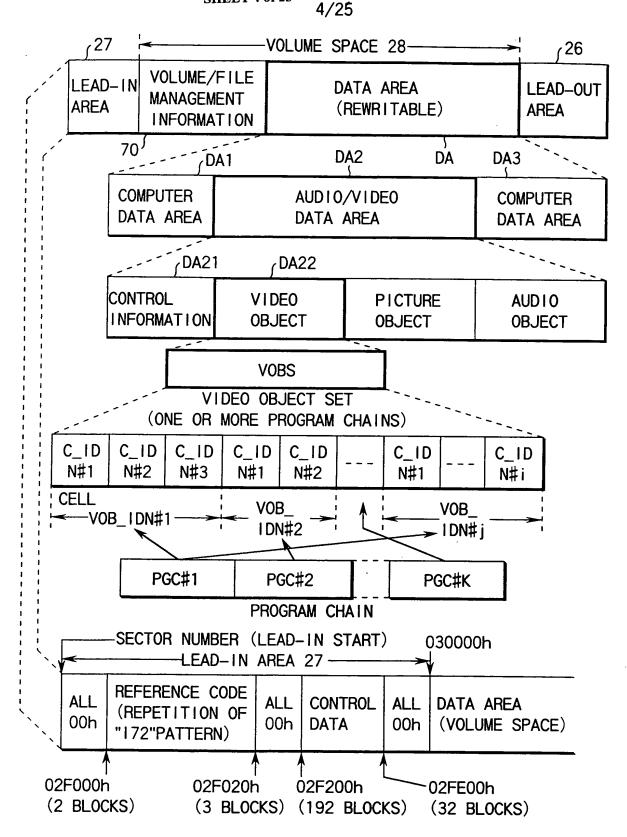


FIG.5

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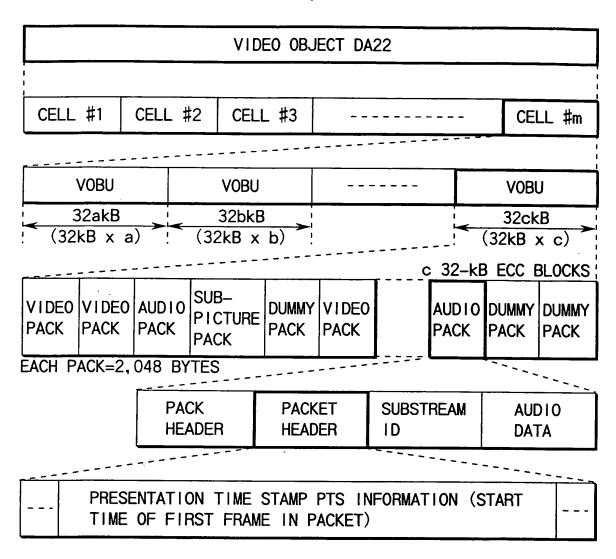


FIG. 6

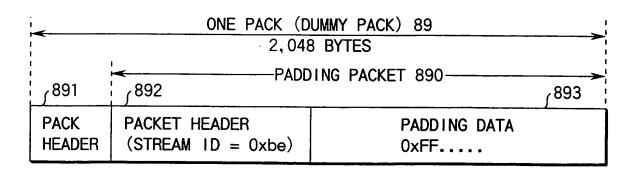


FIG.7

OBLON, SPIVAK, et al.
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INVENTOR: Hideo ANDO, et al.
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NUMBEF PICTUF IN VOE	RES F	NUMBER PICTUR N VOB	RES		NUMB PICT IN V			PIC	BER OF TURES VOBU#1		PIC	BER OF TURES /OBU#n
	·											
CELL TI	ID DURA-CELL SET DATA DESC SETS RIPT					A TIME OF CONSTOR SIZE VOBUS			TIME OF RED			CQUI- ED EFECT DDRESS
REFERRED TO AS EXTENT												
GENERAL CODE DEFECT VIDEO AU INFOR- TABLE INFOR- INFOR- IN						AUD I NF	CELL SUB- AUDIO PICTURE INFOR- INFOR- MATION					
CELL T	IME IN	IFORMA	TION	CTI	#m 			==	====			
CELL T	IME GE	NERAL	INF	ORMA	TION	#m	С	ELL	VOBU	TABLE	#m	
VOBU VOBU VOBU INFORMATION INFORMATION #1 #2												
									7 ! !			
	VOBU GENERAL INFORMATION					DUMMY PACK INFORMATION			AUDIO SYNCHRONIZATION INFORMATION			

FIG.8

OBLON, SPIVAK, et al.
DOCKET NO: 249751US2S DIV
INVENTOR: Hideo ANDO, et al.
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	T		
CORRESPONDING	INFORMATION	INFORMATION	NUMBER OF
INFORMATION	NAME	CONTENTS	BYTES USED
VOBU GENERAL	I-PICTURE	DIFFERENTIAL ADDRESS VALUE OF	1
INFORMATION	END	I-PICTURE END POSITION FROM	
	POSITION	VOBU START POSITION	
DUMMY PACK	NUMBER OF	NUMBER OF DUMMY PACKS IN VOBU	1
INFORMATION	DUMMY PACKS		
	DUMMY PACKS	DUMMY PACK INSERTION	2 x DUMMY
	DISTRIBUTION	DIFFERENTIAL ADDRESS FROM START	PACK
		OF VOBU, AND EACH NUMBER OF	NUMBER
		DUMMY PACKS (2 BYTES EACH)	
AUDIO	AUDIO STREAM	NUMBER OF CHANNELS OF AUDIO	1
	CHANNEL NUMBER	STREAM	
INFORMATION	I-PICTURE	DIFFERENTIAL ADDRESS VALUE OF	1
	AUD10	SECTOR INCLUDING AUDIO PACK OF	
	POSITION #1	THE SAME TIME AS I-PICTURE	
		START TIME FROM START OF VOBU	
		(MSB = "0" : LOCATED BEFORE	
1		VOBU, MSB = "1" : LOCATED AFTER	
		VOBU)	
	1-PICTURE	INDICATE SAMPLE NUMBER OF AUDIO	2
	START AUDIO	SAMPLE POSITION OF THE SAME	_
	SAMPLE	TIME AS I-PICTURE START TIME IN	
	NUMBER #1	SECTOR AS COEFFICIENT OF SERIAL	
		NUMBERS OF ALL AUDIO PACKS	
	AUDIO	PRESENCE/ABSENCE OF	1
		SYNCHRONIZATION INFORMATION	
	INFORMATION	BETWEEN AUDIO AND VIDEO STREAMS	
	FLAG #1	(NEXT ITEM IS NOT AVAILABLE IF	
		ABSENT)	
			2
		INCLUDED IN VOBU	
	DATA		
	1-PICTURE AUDIO	POSITION #2	1
		AUDIO SAMPLE NUMBER #2 ATION FLAG #2 ATION DATA	2
	AUDIO SYNCHRONIZ	ATION FLAG #2	-
	AUDIO SYNCHRONIZ	ATION DATA 8	2
İ	2.10.11101112		-
	 		

FIG.9

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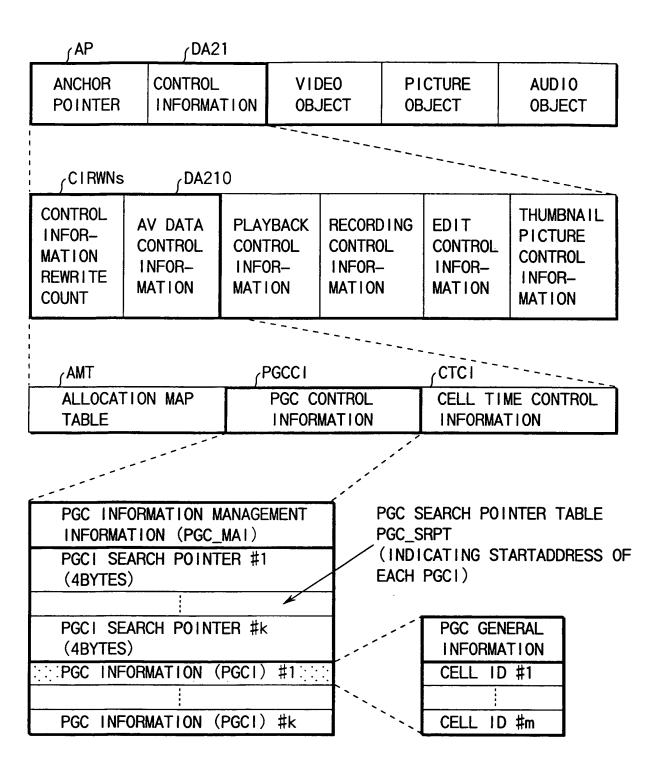


FIG. 10

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POSITIONS OF SHIFT PRODUCED BETWEEN ECC BLOCK BOUNDARY AND VOBU BOUNDARY

			\	CE	LL		\			
DATA	CHANG	E AREA	\	V0BU#g				VOBU#	g+1	
ECC BLOCK			1		ECC BLOCK	l	1		ECC BLOCK	

FIG. 11

SHIFT-REMOVED POSITIONS BETWEEN BOUNDARIES OF ECC AND VOBU

			CELL							
DATA CHANGE AREA VOBU#g						VOBU#	g+1			
ECC BLOCK	ECC BLOCK				ECC BLOCK	l			ECC BLOCK	

FIG. 12

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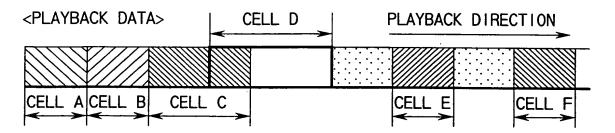


FIG. 13

PGC INFORMATION

PG	C#1	PG	C#2	PGC#3		
NUMBER (OF CELLS	NUMBER (OF CELLS	NUMBER OF CELLS = 5		
CELL#1	CELL A	CELL#1	CELL D	CELL#1	CELL E	
CELL#2	CELL B	CELL#2	CELL E	CELL#2	CELL A	
CELL#3	CELL C	CELL#3	CELL F	CELL#3	CELL D	
				CELL#4	CELL B	
				CELL#5	CELL E	

FIG. 14

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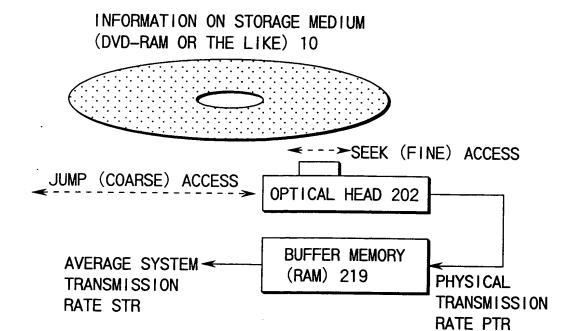


FIG. 15

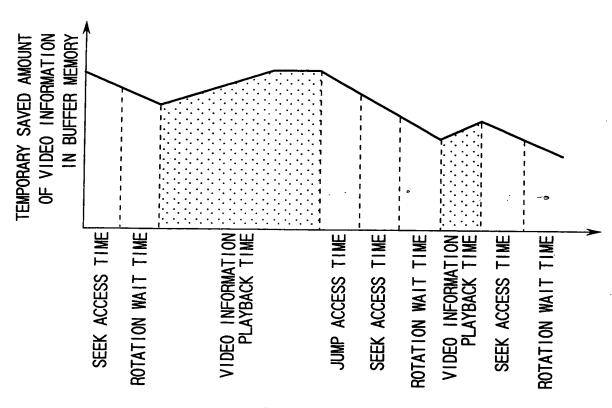


FIG. 16

SHEET 12 of 25 12/25 PLAYBACK TIME PLAYBACK TIME VIDEO INFORMATION PLAYBACK TIME [[]] VIDEO INFORMATION PLAYBACK TIME OF VIDEOINFORMATION IN BUFFER MEMORY TEMPORARY SAVED AMOUNT VIDEO INFORMATION PLAYBACK TIME SEEK ACCESS TIME ROTATION WAIT TIME FIG. 17 OF VIDEOINFORMATION IN BUFFER MEMORY TEMPORARY SAVED AMOUNT SEEK ACCESS TIME VIDEO INFORMATION PLAYBACK TIME ROTATION WAIT TIME JUMP ACCESS TIME SEEK ACCESS TIME VIDEO INFORMATION PLAYBACK TIME ROTATION WAIT TIME JUMP ACCESS TIME FIG. 18

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DOCKET NO: 249751US2S DIV
INVENTOR: Hideo ANDO, et al.
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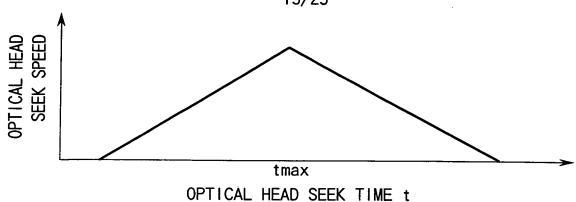


FIG. 19

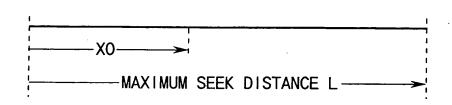


FIG. 20

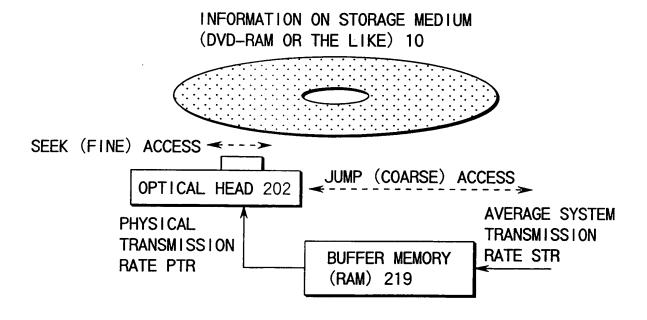


FIG. 21

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FREE AREA 107	CELL #1			CELL	_ #2	CELL #3			
								1	VOBU 108 j

FIG. 22

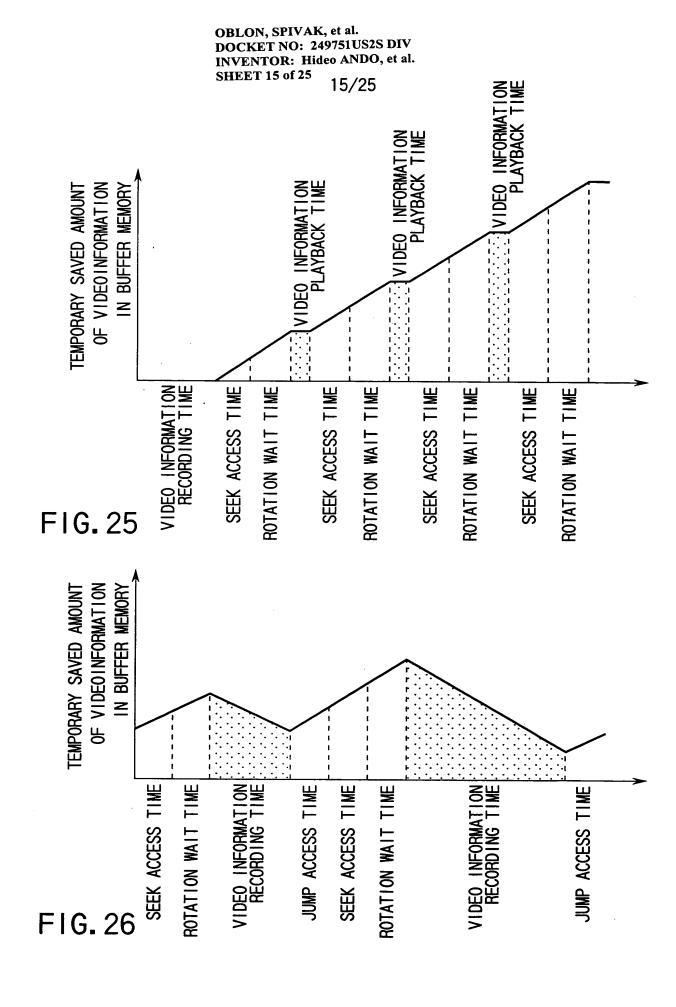
FREE AREA 107	CELL #1		CELL #2A	-	CELL #2B		CELL #3				
	V0BU 108a	V0BU 108b	V0BU	V0BU 108d	V0 10	BU 8e	V0BU 108f	V0BU 108g	V0BU 108h	V0BU 108 i	VOBU 108 j

FIG. 23

CELL #2A	CELL #1		CELL	_ #2B		CELL #3			
VOBU VOBU	V0BU	V0BU	V0BU	VOBU	V0BU	V0BU	V0BU	V0BU	V0BU
108d* 108p	108a	108b	108c*	108q	108f	108g	108h	108 i	108 j

FREE AREA 106

FIG. 24



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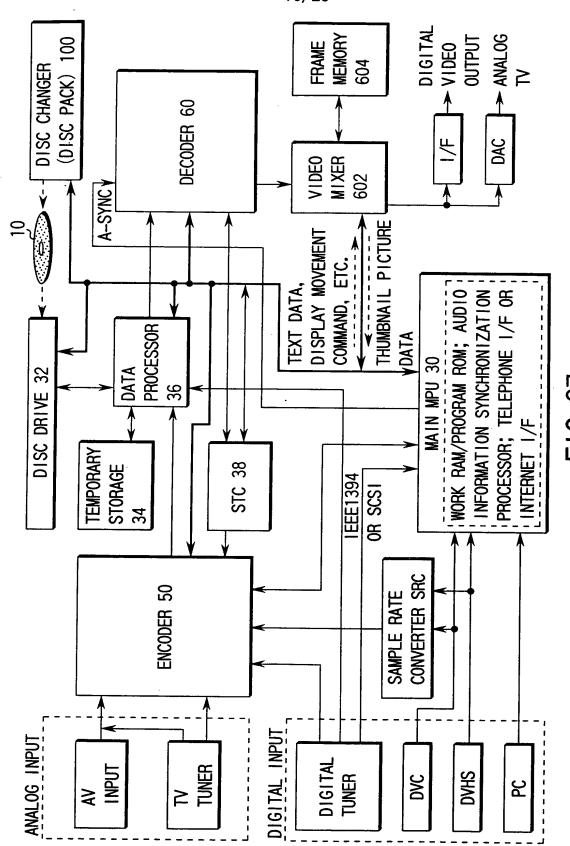
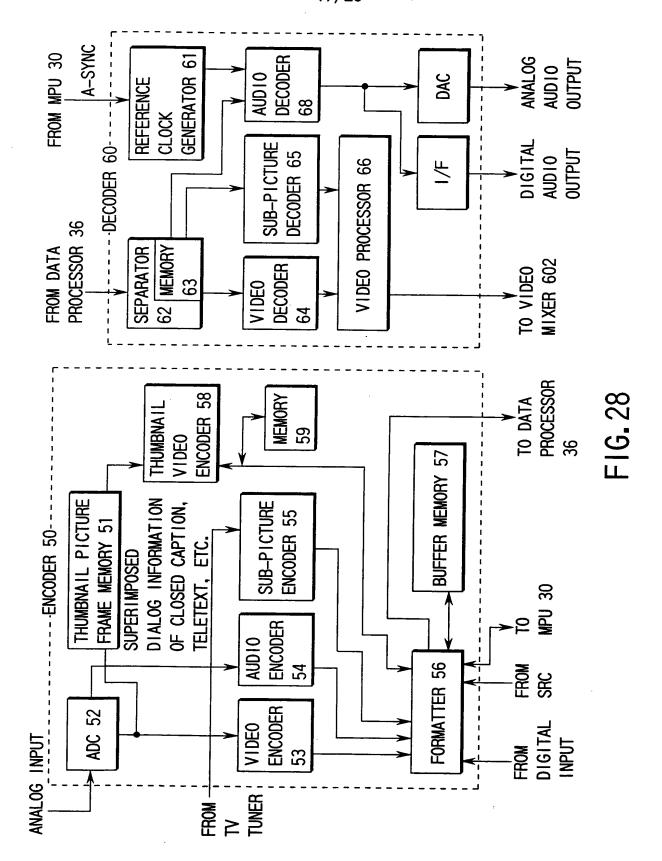


FIG. 27

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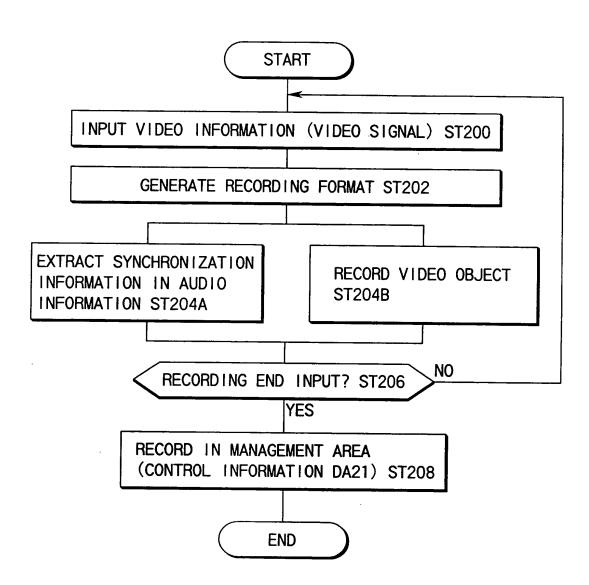


FIG. 29

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{{1} 27	-	·'	VOLUME	SPACE	28	→ ¦	₍ 26		
LEAD-I (REWRI	N AREA I	VOLUME/ MANAGEM INFORMA (REWRIT	IENT TION	DATA (REWF	AREA RITABLE)		EAD-O REWRI		
]	DA1;	70		A2	DA				DA3
	COMPUT DATA A			AUDIO/V DATA AR				PUTER A ARE	3
DA21a)A23a	∫DA24		D	A25a		DA26a
NAVIGATION DATA RTR_VMG MOVIE VIDEO RECORDING	OBJECT RTR_MOV. VRO	- <u>의</u>	OBJECT RTR_STO. VRO	ADDITIONAL AUDIO RECORDING	OBJECT FOR STILL PICTURE RTR STA. VRO	MANUFACTURER	SPECIFICATION OBJECT	MSP. V0B	STREAM OBJECT AST. SOB
∫DA210a	DA210t			DA210d		10e -	- _{/-} DA2		_DA210g
RTR VIDEO MANAGER INFORMATION RTR_VMGI	MOVIE AV FILE INFORMATION TABLE M_AVFIT	STILL PICTURE AV FILE	TABLE S_AVFIT	UKIGINAL PEC INFORMATION ORG_PGCI	USER-DEFINED PGC INFORMATION	TABLE UD_PGCI	TEXT DATA MANAGER	TXTDT_MG	MANUFACIURER INFORMATION TABLE MNFIT
,DA2		DA2102-	1			102-n)·	<u>_</u> DA	2104
MOVIE AV FILE INFORMATION TABLE	M_AVFITI	MOVIE VOB STREAM INFORMATION	#1 M_VOB_STI#1		MOVIE VOB STREAM	INFORMATION #n	M_V0B_ST1#n	MOVIE AV	INFORMATION M_AVFI
DA21040_	_ f DA2104			DA2104		A2104	44–1		044–ո լ
GENERAL INFORMATION M_AVFI_GI	INFORMATION SEARCH	M_V0B1_SRP#1	MOVIE VOR	INFORMATION SEARCH	M_VOBI_SRP#n MOVIE VOB	INFORMATION #1 M VOBI#1	1	30/V 31/VON	- $-$
		ſ	MOVIE	VOB GEN	JERAI		ME MA	ΛÞ	
FIG. 30					I_VOBI_(TMAPI

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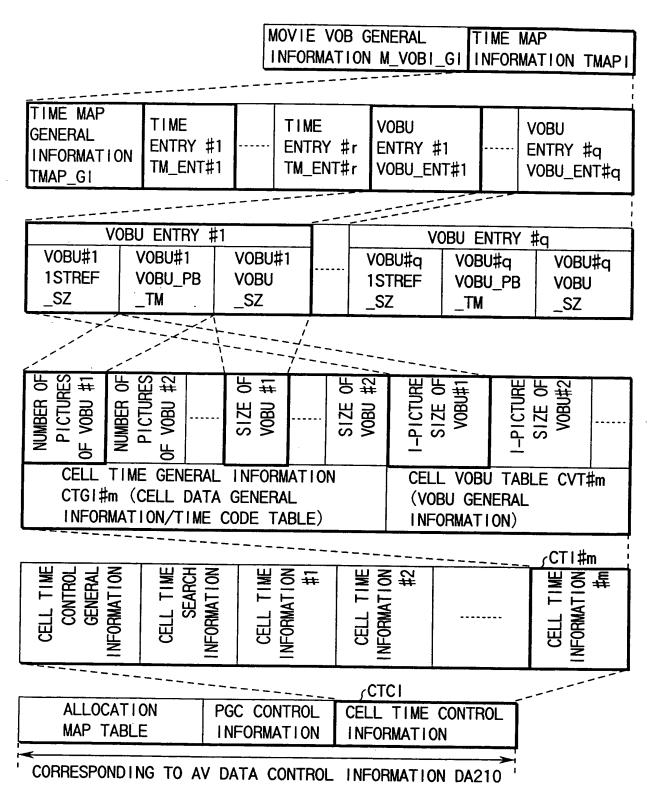


FIG. 31

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TIME MAP GENERAL INFORMATION TMAP_GI

RELATIVE BYTE POSITION	FIELD NAME	CONTENTS	NUMBER OF BYTES
0-1	TM_FNT_Ns	NUMBER OF TIME ENTRIES	2
2–3	VOBU_ENT_Ns	NUMBER OF VOBU ENTRIES	2
4–5	TM_OFS	TIME OFFSET	2
6–9	ADR_OFS	ADDRESS OFFSET	4

FIG. 32

TIME ENTRY TM_ENT

RELATIVE BYTE POSITION	FIELD NAME	CONTENTS	NUMBER OF BYTES
0–1	VOBU_ENTN	VOBU ENTRY NUMBER	2
2	TM_DIFF	TIME DIFFERENCE	1
3–6	VOBU_ADR	TARGET VOBU ADDRESS	4

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DATA ADEA (DENDITADIE) DA																
DATA AREA (REWRITABLE) DA																
RTR MOB.VRO DA22a-1		COMPUTER DATA FILE			RTR MOB.VRO DA22a-2			RTR STO. VRO DA23a-1			RTR MOB.VRO DA22a-3					
EXTENT /SET #A		EXTENT /SET #B			EXTENT /SET #C			EXTENT /SET #D			EXTENT /SET #E					
LBN = LOGICAL BLOCK NUMBER																
V_PCK LBN·a	Ã	V PCK I RN. 3±b_1			V_PCK LBN·c	V_PCK LBN·c+1		V_PCK LBN·c+d-1	V_PCK LBN·c+d		A_PCK LBN·e-1	V_PCK LBN·e		V_PCK LBN·e+h		A_PCK LBN·e+f-1
M·ADR = MOVIE ADDRESS ST.ADR = STILL PICTURE ADDRES																
M'ADA = MOVIE ADDRESS				>> \ST·AD						——————————————————————————————————————				URE ADDRESS		
V_PCK M·ADR o	V_PCK M·ADR g+1	V PCK M·ADR b-1	V_PCK M·ADR b		V_PCK M·ADR b+h		A_PCK M·ADR b+f-1	V_PCK M.ADR b+f	V_PCK M·ADR b+f+1		V_PCK M·ADR b+f+d-			V_PCK ST.ADR o		A_PCK ST.ADR e-c-d
VOBU#1 VOBU#2		BU#2	VOBU#3			VOBU#4			VOBU#5					VOB		
VIDEO OBJECT VOB#α					V0B#				B					ENTRY		
VOBU_ VOBU PB_TM PB_1			- I -			VOBU_ PB_TM		- 1	VOBU_ PB_TM			,		VOB GROUP		
TI	TIME DIFFERENCE TIME ENTRY POINT TM_DIFF															

FIG. 34

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ROOT DIRECTORY SUBDIRECTORY DVD RTR DIRECTORY FILE RTR. IFO (NAVIGATION DATA RTR_VMG) RTR. BUP (BACKUP OF RTR. 1F0) RTR. MOV. VRO (MOVIE VIDEO OBJECT) RTR_STO. VRO (STILL PICTURE VIDEO OBJECT) RTR_STA. VRO (ADDITIONAL AUDIO OBJECT FOR STILL PICTURE) MSP. VOB (MANUFACTURER SPECIFICATION OBJECT) AST. SOB (ANOTHER STREAM OBJECT) RTR = REAL-TIME RECORDING OTHER DIRECTORIES VIDEO_TS (VIDEO TITLE SET) AUDIO_TS (AUDIO TITLE SET) SUBDIRECTORY FOR OTHER FILES SAVING COMPUTER DATA

FIG. 35

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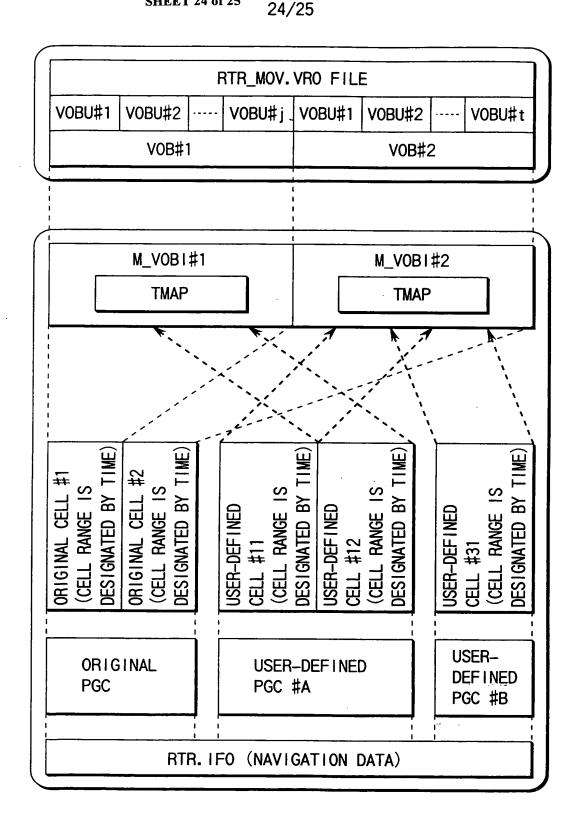


FIG. 36

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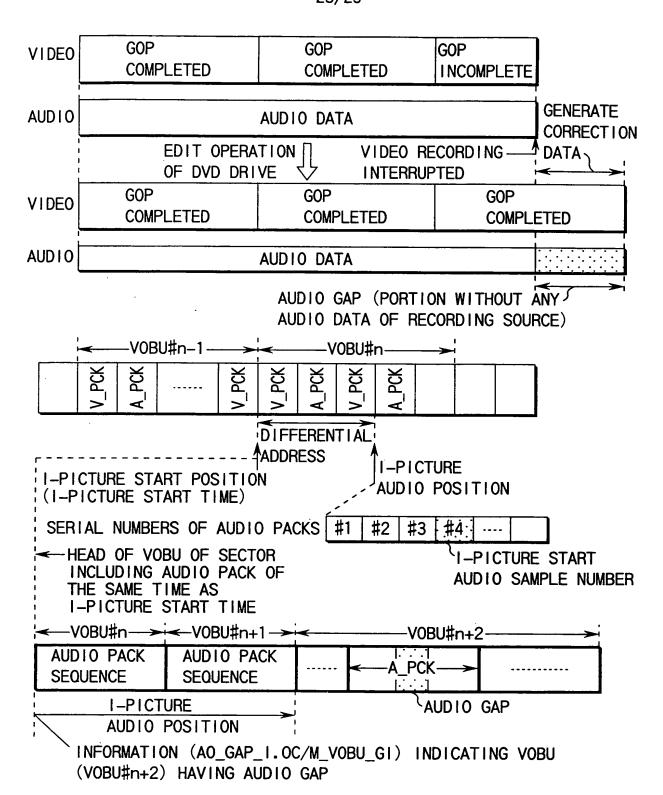


FIG. 37